A sharpening device that utilizes templates for sharpening specific shaped points. The templates are easily replaceable for grinding additional facets or for additional styles of points.
HAND ENGRAVING SHARPENING DEVICE

BACKGROUND OF THE INVENTION

1. Field of Invention

The invention relates to a sharpening fixture, more particularly to a hand engraving sharpening apparatus for use to rapidly and accurately index a graver to specific angles for grinding specialized points.

2. Description of Prior Art

Since the 19th century, hand engravers and jewelers have used an abrasive surface such as an Arkansas stone or hone to sharpen hand engraving points. More recently, adjustable fixtures along with a motorized hone to spin a stone or diamond grinding lap have been utilized. These fixtures give positioning to the graver in two rotational axes. One axis is the rotational angle that is aligned with the linear axis of the graver shank and the second is the loft angle, which is at a right angle to the linear axis of the graver shank. These dual angle fixtures have five degree division marks and allow the user to rotate them to the desired position and manually tighten them into place.

U.S. Pat. No. 7,032,586 to Lindsay discloses a unique engraving cutter point that requires a more accurate fixture than presently available to attain the geometric relationships to reproduce the point. Applicant has found that even a half a degree error in the geometric relationship can affect the clearance of the cutting edge and how well the point works to prevent heel drag as described in U.S. Pat. No. 7,032,586 to Lindsay. With available prior art dual angle graver grinding fixtures, it is tedious to sharpen the applicant’s type of point. It is easy to become confused and frustrated trying to set the dual angle fixtures properly. If there are errors in accuracy in this type of indexing fixtures it contributes to the point not being ground correctly as well as making it difficult to set up and retouch up a point when it becomes dull.

Before the advent of the dual angle fixtures in the market, tilt fixtures were utilized. U.S. Pat. Nos. 975,329 and 4,078,338 disclosed tilt fixtures that are universal and adjustable for setting angles. However, these sharpening fixtures also depended on the user having the knowledge and skill to set exactly which angles are needed in order to get good results with specialized graver’s points. A sharpening fixture is needed that is fool proof, allowing anyone to easily sharpen specialized points such as disclosed in U.S. Pat. No. 7,032,586. A device such as this is possible by the use of replaceable templates that have the exact settings for a particular point already prefigured. It would allow a user to sharpen specialized points easily and be able to repeat the accuracy exactly.

OBJECTS AND SUMMARY OF THE INVENTION

It is the object of this invention to provide an improved hand engraving sharpening device that utilizes pre-determined templates for specific graver points. The templates are easily replaceable for grinding additional facets or for a variety of style of graver points with a great deal of accuracy and re-sharpening repeatability. The use of prefigured templates is less confusing and more accurate for beginners as well as professionals to sharpen specialized graver points accurately such as disclosed in U.S. Pat. No. 7,032,586 to Lindsay.

BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiment of the invention is described below with reference to attached drawing figures, wherein:

FIG. 1 is a perspective view of a Hand Engraving Sharpening Device constructed in accordance with the present preferred invention;

FIG. 2 is a sideview of the present invention;

FIG. 3 through FIG. 7 are six views of a single point engraving cutter point that the present invention with its example templates are made to sharpen;

FIG. 8 and FIG. 9 are perspective views of the graver holder 10;

FIG. 10 is a side view of the graver holder 10;

FIG. 11 is an end view of the graver holder 10;

FIG. 12 is a sectional view of the graver holder 10;

FIG. 13 is a perspective view of collar 14;

FIG. 14 is an end view of template 13;

FIG. 15 is an end view of template 12;

FIG. 16 is a perspective view of the present invention utilizing use of template 12 while grinding the heel-relief of the point;

FIG. 17 is a perspective view of the present invention utilizing use of template 13 while grinding the face of the graver point;

FIG. 18 is a perspective view of the present invention utilizing use of template 13 while grinding the heel of the graver point.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment of a hand engraving sharpening device in accordance with the present invention is illustrated in FIG. 1 and FIG. 2. The apparatus consists of a flat surface 6, a grinding lap 4, a graver holder 10, a collar 14, a thumbscrew 16, a template-A 12, a template-B 13, and a graver 2. The graver holder 10 is further illustrated in FIG. 8, FIG. 9, FIG. 10, FIG. 11, and FIG. 12 and consists of a shaft 42, an annular ring 34, an index pin 38, a setscrew 40, and a tool hole 36. The collar 14 is further illustrated in FIG. 13 and consists of a hole 46 that is made to fit with a slip fit over shaft 42 (FIG. 9) and thumbscrew 16 that is used to secure collar 14 into place along shaft 42. Template-A 12 is further illustrated in FIG. 14 and consists of a hole 58 that is made for a sliding fit with shaft 42 (FIG. 9), index hole 60 that is made for a sliding fit with index pin 38 (FIG. 12), taper indexes 68, 70, and 72, and relief indexes 62 and 64. Template-B 13 is further illustrated in FIG. 15 and consists of a hole 48 that is made for a sliding fit with shaft 42 (FIG. 9), index hole 50 that is made for a sliding fit with index pin 38 (FIG. 12), face index 56, and heel indexes 52 and 54.

Referring to FIG. 1, graver 2 is an example graver and point that the sample templates in the invention are made to sharpen. This example graver point (graver 2) is further illustrated in the six views of FIG. 3 through FIG. 7. Referring to FIG. 3 through FIG. 7, the point of graver 2 consists of various facets that are labeled as follows:

face facet 24;

taper facets 18, 20, and 22,
heel-relief facets 26 and 28; and
heel facets 30 and 32.

Operation

When a jeweler, engraver, artist or crafts person desires to shape and sharpen his or her engraving point, a graver 2 (FIG. 1) is inserted into the tool hole 36 (FIG. 8 through FIG. 12) that is in the front end of tool holder 10 and setscrew 40 is locked to hold the graver 2 in place. Depending on which facets on the graver point (FIG. 3, 4, 5, 6, 7) are desired to be ground, the appropriate template is chosen, either template 12 or template 13 (FIG. 16 and FIG. 17). Template 12 will be chosen first in this example. Referring to FIG. 9, template 12 is slid onto shaft 42 via hole 58 (FIG. 14) and index pin 38 (FIG. 9) is lined up and inserted into index hole 60 (FIG. 14). To hold template 13 in place, collar 14 (FIG. 13) is then slid onto shaft 42 (FIG. 42) via hole (FIG. 13), pushed up against template 13 and thumb screw 16 (FIG. 13) is tightened. Referring to FIG. 16, the user then sets one of the template flat indexes down against flat surface 6 and the graver point against grinding lap 4. The user then robs the graver point against the grinding lap 4. Please note, although it is not illustrated, grinding lap 4 could also be a power lap, wherein the lap spins or reciprocates by the presence of a motor. Grinding lap 4 can be a stone, or a lap that is embedded with diamond abrasive. The user proceeds to grind each facet of the graver point by lifting the apparatus up, rotating it to the next index and setting it back down. The index positions of the template each correspond to a facet of the point. Referring to FIG. 14, taper indexes 68, 70, and 72 correspond with the graver point taper facets 18, 20, and 22 illustrated in FIG. 3, FIG. 4, FIG. 5, FIG. 6 and FIG. 7. Referring to FIG. 14, relief indexes 62 and 64 correspond with graver point heel-relief facets 26 and 28 in FIG. 3, FIG. 4, FIG. 5, FIG. 6 and FIG. 7. FIG. 16 and FIG. 1 illustrate the use of template 12. After the user finishes grinding the facets that template 12 provides, he or she replaces template 12 with template 13 (FIG. 18) and proceeds to grind additional facets with template 13. Referring to FIG. 15, heel indexes 52, 54 and 64 correspond with graver point heel facets 30 and 32 in FIG. 3, FIG. 4, FIG. 5, FIG. 6 and FIG. 7. Referring to FIG. 15, face index 56 corresponds with graver point face facet 24 in FIG. 3, FIG. 4, FIG. 5, FIG. 6 and FIG. 7. After the graver point is ground and finished, it is removed from the apparatus. Referring to FIG. 2, in order for the templates to work as designed, distance D1 and distance D2 need to be given to the user so he or she knows to position the graver a predetermined distance from a template and that grinding lap 4 is used at predetermined height.

Conclusion, Ramifications, and Scope

Accordingly, the reader will see that the invention provides an improved sharpener for specialized or even non-specialized types of engraving points. The use of templates makes it much easier for the engraver, jeweler, carver or crafts person to concentrate on his or her work rather than spending time figuring out angles and math in order to sharpen their engraving points. Points such as disclosed in U.S. Pat. No. 7,032,586 to Lindsay are much easier for the user to reproduce with the present invention. These prefigured templates can be manufactured for all types of graver and carving points. Because the templates are made to be replaced easily for grinding various facets and for various styles of points, the invention will both increase the quality of work as well as speed of the user.

Although the invention has been described with reference to the illustrated embodiment, it is noted that equivalents may be employed and substitutions made herein without departing from the scope of the invention as recited in the claims. For example:

Graver holder 10 illustrated in FIG. 8, FIG. 9, FIG. 10, FIG. 11, and FIG. 12 could be adapted to have a second type of graver holder at the opposite end of shaft 42 for holding and sharpening graver points, such as the type of tool graver holder that utilizes replaceable carrier blocks as disclosed in U.S. Pat. No. 5,203,417.

Grinding lap 4 could also be a power lap, wherein the lap spins or reciprocates by the presence of a power movement source such as a motor.

Magnetism or magnetic strip could be utilized to aid in holding the templates in place on flat surface 6 (FIG. 1, FIG. 2). This would be useful for temporary unattended operation, by permitting the operator to avoid holding the apparatus in place if a lot of material needs to be taken off to grind one or more of the facets being ground.

The templates disclosed are prefigured and fixed without an adjustment method for adjusting the profile shape and angles of the templates. An equivalent could be made wherein the templates are user adjustable and still allow the replacement uniqueness of the invention be utilized by having the templates easily replaced. Users could then set the templates to their liking for a particular type of point and plan on leaving them set there and switch to another template for other shaped point or for more required facets for a particular specialized point.

The sharpening device disclosed was originally designed for sharpening graver points for engraving artists and jewelers, however the device can be utilized in other fields needing to shape or place facets on an object.

Accordingly, the scope of the invention should be determined not by the embodiment illustrated, but by the appended claims and their legal equivalents.
40. A device to aid in placing facets at the end of an object as recited in claim 39, further comprising: a grinding surface.

41. A device to aid in placing facets at the end of an object as recited in claim 40, wherein said grinding surface is embedded with diamond abrasive.

42. A device to aid in placing facets at the end of an object as recited in claim 40, further comprising: a motor for spinning said grinding surface.

43. A device to aid in placing facets at the end of an object as recited in claim 39, further comprising: a thumb screw.

44. A device to aid in placing facets at the end of an object as recited in claim 39, further comprising: an index pin for indexing said at least one template plate with said linear body.

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